Statewide Transit-Oriented Development Study

Factors for Success in California

TECHNICAL APPENDIX

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Appendix to Chapter 1: Transit-Oriented Design Guidelines for Sacramento County

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Peter Calthorpe's TOD Guidelines:

Some of the earliest TOD guidelines ever produced were completed in 1990 by Peter Calthorpe Associates for the County of Sacramento (California) Planning Department.[1] In these guidelines, Peter Calthorpe states that the TOD concept may be applied on infill sites, those with potential for redevelopment, and in urban growth areas where he envisions new developments. Further, each TOD will have a Secondary Area adjacent to it that includes lands no further than one mile from the transit stop. For transit to be economically viable, uses near transit stops must have a minimum average residential density of 12 units per acre, and commercial uses must create a high level of pedestrian activity. The street network must provide multiple direct street and bicycle connections to the transit stop and core area without use of an arterial.

Secondary Areas may have lower- density housing, public schools, community parks, intensive employment-generating uses, and Park-and-Ride lots. Competing retail uses are not allowed in the Secondary Area. The Secondary Area is intended to provide for uses that are not appropriate in TODs because they are auto-oriented. These areas will support TOD businesses and generate riders for the transit system. The TOD concept maintains an 8-to-1 ratio of single-family surrounding Secondary land area to TOD land area. By maximizing street connections and making it convenient for residents to bike to transit, many auto trips will be kept off of arterials.

Location Criteria

Calthorpe created the following design guidelines as criteria for site selection.

1. The TOD site must be located either on an express transit system, with service on 10- to 15-minute headways, or on a feeder bus line network within 10 minutes transit travel time from the express transit system.

Justification: The fundamental purpose of TODs is to create a land use pattern that will support transit. In order to successfully reduce auto travel, TODs must be located within easy walking distance of, or with very convenient feeder bus connections to, dedicated transit lines.

2. The TOD site must be located within an Urban Growth Boundary or Urban Policy Area.

Justification: A fundamental premise of TODs must be to limit sprawl by clustering development in serviceable areas that encourage compact and efficient urban forms.

3. TOD concepts can be applied to primarily undeveloped sites in urban growth areas served by an express transit system or within 10 minutes transit travel time along a feeder bus line. TODs in urban growth areas may be surrounded by Secondary Areas.

Justification: TODs are an opportunity to promote efficient development patterns in newly developing areas. Urban growth areas should be developed as a series of TODs linked by transit systems.

4. TOD concepts can be applied to infill and redevelopment sites located in urbanized areas with existing uses. They must have available infrastructure capacities on and adjacent to the site and be located on the express transit system or within 10 minutes transit travel time along a feeder bus line.

Justification: Implementation of the TOD concept on infill and redevelopment sites has the opportunity to redefine development patterns from auto-oriented to transit-oriented. Careful consideration must be given to the selection of appropriate sites to ensure that any traffic and utility constraints are not exacerbated.

5. TOD concepts can be applied to existing retail, office, and industrial sites by adding mixed-uses with structured parking on existing surface parking lots.

Justification: To encourage compact metropolitan growth patterns, existing underutilized lands should be redeveloped as TODs, particularly sites at or adjacent to existing or planned transit stops.

Site Criteria

1. In Urban Growth Areas, TOD sites must be at least 40 acres and no more than 160 acres in size. These TOD sites must be complemented by Secondary Areas.

Justification: In Urban Growth Areas, 40 acres is the minimum area necessary to develop a TOD that can function as a mixed-use transit-oriented destination. A one-quarter-mile radius is equivalent to 160 acres.

2. Infill and redevelopment sites must be at least 20 acres and no more than 160 acres in size. Sites with the minimum acreage must be at least 80% vacant or developable.

Justification: Infill sites have the advantage of adjacent development and existing infrastructure. As long as the adjacent uses are supportive and allowed to act as an extension of the TOD, the minimum site size can be as small as 20 acres. Less than that will not allow the TOD to function effectively. If the site has a large percentage of economically viable uses that are unlikely to redevelop, application of the TOD design guidelines may not be successful in creating a transit-oriented community.

3. The TOD must not contain land further than 2,000 feet from a transit stop. The Secondary Area may contain land no further than one mile from the stop.

Justification: To encourage transit use, the stop should be convenient and highly accessible by foot or bicycle from all areas of the TOD.

4. Regardless of the number of property owners, the TOD application must consist of a comprehensive TOD Development Plan or Specific Plan.

Justification: The greater the number of property owners, the more difficult it will be to reach consensus on plans. Property owners must work together and with the jurisdiction to formulate development plans and implementation mechanisms for the entire site.

Appendix to Chapter 2: Methodology for Estimating Energy Conservation and Climate Change Benefits of TOD

**Primary Author/Researcher of this Section: Daniel Mayer,
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In this section of the Appendix, the methodologies that were used to estimate several of the environmental benefits of TOD discussed in Chapter 2 of the report are presented. These estimates are based on data from available research that is related to this subject. Also presented are the actual calculations that were used to derive these estimates.

I. Reduced Energy Consumption: Gallons of Gasoline Saved

Chapter 2 Section VII ("Reduced Energy Consumption") of the Report states that; "[A TOD] *household could consume 250 to 380 fewer gallons of gasoline each year, on average* [compared with an average suburban home with an annual VMT of 25,000 miles]."

Methodology

For this calculation the researcher calculated the energy savings of living in a TOD vs. a suburban neighborhood and converted this into gallons of gasoline. In order to do this, VMT savings were converted to BTUs (British Thermal Units – a measure of energy[i, 2]) and then gallons of gasoline. (VMT savings were taken from Cal EPA ARB data,[ii] conversion of VMT to BTU was accomplished using Oak Ridge National Laboratory Data; conversion of BTU to gallons of gasoline was accomplished using US Environmental Protection Agency data).

Calculations & Citations (NOTE: Actual calculations are indented)

VMT reductions per TOD household/year

Typical annual VMT for suburban household…… 25,000 miles[3]

VMT saved for living in a TOD vs. suburbia…….. 20% to 30%[4]

(25,000 VMT/household/year) * (0.20) = **5,000 VMT**/household/year savings

(25,000 VMT/household/year) * (0.30) = **7,500 VMT**/household/year savings

BTU reductions per TOD household/year (using above results)

1 VMT…….. 5,822 BTU[5]

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[i] BTU: One Btu is the quantity of energy in the form of heat required to raise the temperature of one pound of water one degree Fahrenheit).

[ii] The Statewide TOD Study report refers to a study by the California Air Resources Board in 1995 that estimated the transportation benefits of TOD at the household level. The ARB study found that, "significantly increasing walking and transit opportunities" along with strategically-located moderate- to high-density development, could achieve an annual reduction in VMT of between 20-30% per TOD household (as compared to typical sprawl-style development.)"

(5,000 VMT/household/year savings) * (5,822 BTU/VMT) = 29.11 million BTU
(7,500 VMT/household/year savings) * (5,822 BTU/VMT) = 43.67 million BTU

Gallons of gasoline saved per TOD household/year (using above results)

1 gallon of gasoline ……114,500 BTU in summer,[6]
1 gallon of gasoline ……112,500 BTU in winter[7]
[(114,500 BTU/gallon) + (112,500 BTU/gallon)] / 2 = 113,500 BTU/gallon
(29.11 million BTU /household/year) / (113,500 BTU/gal.) = **256.5 gallons**/household/year
(43.67 million BTU /household/year) / (113,500 BTU/gal.) = **384.8 gallons**/household/year

II. Reduced Energy Consumption: Power Equivalence

Chapter 2 Section VII ("Reduced Energy Consumption") of the Report states that; *"If the energy content of that gasoline* [250 – 380 gallons] *were converted into electricity, it could power a home for 5-7 months per year on the energy saved."*

Methodology

The amount of energy savings calculated in Section I. was converted into kilowatt-hours and then expressed in months of usable electricity. In order to do this, the researcher first used the previously calculated number of BTUs saved per year for a TOD household (calculated in Section I.) and calculated the amount of usable energy (expressed in BTU) that would be left over after power generation and distribution (using CEC data[8, 9]). Then, the researcher converted this energy into the form used in a home (kilowatt-hours). This data was then expressed as the number of months an average Californian home could be powered with the energy saved (using CEC data[10]). These data were then rounded to the nearest month for inclusion in the main body of the report.

Calculations & Citations (Continued from Section 1)

Amount of energy left over after standard production & distribution inefficiencies are subtracted

Thermal efficiency of a typical power generator……35% (65% lost as heat)[11]
BTU savings/household/year (calculated in Section 1)…..…… 29.11 – 43.67 billion BTU/year
(29.11 million BTU/year) * (0.35) = 10.19 million BTU/year
(43.67 million BTU/year) * (0.35) = 15.28 million BTU/year
Amount of power lost during transmission……~4%[12]
(10.19 million BTU/year) * (0.96) = 09.78 million BTU/year
(15.28 million BTU/year) * (0.96) = 14.67 million BTU/year

kWh reductions per TOD household/year (using above results)

1 kWh. …… 3,412 BTU
(09.78 million BTU /household/year) / (3,412 BTU/kWh) = **2.867 thousand kWh**/household/yr
(14.67 million BTU /household/year) / (3,412 BTU/kWh) = **4.299 thousand kWh**/household/yr

Months an average Californian home could be powered with the saved energy (using above results)

"Rule of Thumb" energy usage/household ……600 kWh/month[13]
(2.867 thousand kWh) / (600 kWh/month) = **4.778 months**
(4.299 thousand kWh) / (600 kWh/month) = **7.165 months**

III. Reduced Energy Consumption: Savings on Vehicle Expenses

Chapter 2 Section VII ("Reduced Energy Consumption") of the report states that; "*Furthermore, using AAA 'Total Cost of Ownership' data, a $3,000 to $4,000 annual savings on vehicle-related expenses is possible for each TOD household due to reduced driving costs.*"

Methodology
For this calculation the researcher determined the reduction in VMT that would be experienced between a TOD vs. a suburban household (calculated in Section I. by using ARB data). The researcher then converted these VMT savings into monetary savings by multiplying the VMT savings by the Cost per Mile AAA data. These data were then rounded to the nearest thousand for inclusion in the main body of the report.

Calculations & Citations (Continued from Section I.)

Monetary savings of living in a TOD (reduced vehicle costs) [i]

Total Cost of Ownership, Cost per Mile……45.8 cents/mile [14]
VMT reduction per TOD household (calculated in Section 1) = 5,000 to 7,500 miles
($0.458/mile) * (5,000 miles) = $2,290
($0.458/mile) * (7,500 miles) = $3,435

AAA Data is based on 20,000 miles/yr.; ARB Data is based on 25,000 miles/yr. Therefore, the operating cost (gas, oil, maintenance & tires) for 5,000 mi. must be added

AAA Composite National Average, Operating Costs only, 2001…13.6 cents/mile [15]
($0.136/mile) * (5,000 miles) = $680
($2,485) + ($680) = **$2,970**
($3,728) + ($680) = **$4,115**

IV. Reduced Greenhouse Gas Emissions: Per-Household CO_2 Reduction

Chapter 2 Section VII ("Lower 'Greenhouse Gas' Emissions") of the 'Statewide TOD Study' report states: "*The average TOD household could emit 2.5 to 3.7 tons less CO_2 yearly than its non-TOD counterpart.*"

Methodology
For this calculation the researcher determined the amount of gasoline that a TOD household could save per year compared with a suburban household, and then +converted that into tons of CO_2 emitted per year. In order to do this, the researcher took the previously calculated gasoline figures (calculated in Section I.) and multiplied that by the amount of CO_2 emitted per gallon of gasoline burned. These data were then expressed in tons and rounded to the nearest tenth of a ton. The last data set was included in the main body of the report.

[i] Total Cost of Ownership includes: comprehensive, collision, bodily injury and property damage insurance; license, registration, taxes, depreciation, finance charge, gas, oil, maintenance, and tires.

Calculations & Citations (Continued from Section 1)

Reduction in the amount of CO2 released into the atmosphere per TOD household per year

1-gallon gasoline yields……	8.750 kg CO_2 [16, i]
TOTAL gallons of gasoline saved/household/year……	256.5 to 384.8 (calc. in Section 1)
(256.5 gallons/household/year) * (*8.750 kg CO2/gallon*)	= 2,244 kg CO_2/household/year
(384.8 gallons/household/year) * (*8.750 kg CO2/gallon*)	= 3,367 kg CO_2/household/year
1 kg ……	2.205 lbs. [17]
(*2.205 lbs./kg*) * (2244 kg CO2/household/year savings)	= 4,948 lbs. CO_2/household/year
(*2.205 lbs./kg*) * (3367 kg CO2/household/year savings)	= 7,424 lbs. CO_2/household/year
Number of pounds in a ton (short)……..	2,000 lbs./ton [18]
(4,948 lbs.) / (2,000 lbs./ton)	= **2.474 tons CO_2**
(7,424 lbs.) / (2,000 lbs./ton)	= **3.712 tons CO_2**

V. Environmental Consequences of Global Climate Change

Terms Defined[ii]

Continental Glaciation: Term used to describe the types of glaciers that are so huge that they cover substantially large parts of continents.

Glacial Age: A time in which the Earth has two well-defined polar ice caps that do not substantially disappear during summer months.

Glacial Maximum: Those instances within a glacial age in which continental glaciation is at a maximum. (That is; Continental glaciers cover the largest extent of high latitude continents for that particular glacial cycle)

Glacial Minimum: Those instances within a glacial age in which continental glaciation is at a minimum.

Non-Glacial Age: A time in which there are no well-defined polar ice caps that persist through the summer months.

Past Climate Change

During the Earth's history there have been four major glacial ages interrupting the more common non-glacial ages. We are currently in a glacial minimum of a glacial or ice age. We know from arctic and antarctic ice core samples that there have been variations in CO_2 concentrations that have kept step with relatively warm glacial minimums and severely cold glacial maximums.[iii] CO_2 concentrations are higher

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[i] Gasoline density = 2791grams/gallon
Percent of carbon by mass = 85.5%
Mass of CO2 from 1 gallon of gas =
1 gallon gasoline × 2.791kg/gallon × 85.5% × (44.0g CO2 / 12.0g C) = 8.750kg CO2

[ii] Popular terms, such as "ice age", are constantly misused and poorly understood by the public. For example: Most lay persons associate the term "ice age" with the last glacial maximum that ended about 15,000 years ago, when, by the definition used by most geologists, we are currently in an interglacial period within an ice age (using the old terminology). In order to avoid confusion the author has listed terms that are more meaningful and (most importantly) have stable definitions in the scientific community.

[iii] Carbon dioxide (CO_2) is a heat trapping gas. Methane (CH_4) also traps heat (albeit at a far greater efficiency), but it relatively quickly breaks down into CO_2, water vapor (H_2O) and heat in the atmosphere.

during glacial minimums and much lower during glacial maximums.[19] This relationship is significantly strong enough to prove a reinforcing if not causal relationship between CO_2 concentration and global climate change.[20]

Current Climate Change

Gas trapped in ice core samples taken from the Arctic, along with data collected at Mauna Loa Observatory in Hawaii, have conclusively shown that a 30% increase of CO_2 concentration has occurred since pre-industrial times.[21] The rate of this increase is faster than at any time in the last 160,000 years.[i, 22] Scientists know that combustion of fossil fuels is the primary source of this increase in CO_2 concentration.[23, ii] There has been an unprecedented increase in average world temperatures of ½ to 1 degree Fahrenheit since 1900 along with an increase of 4 to 10 inches in average sea level.[24] These data, combined with the fact that CO_2 is a heat trapping gas, leads a great majority of climatologists to conclude that the increase in CO_2 concentration is at least a significant, if not substantial, contributor to global warming.

Future Climate Change

In the next century CO_2 from the combustion of fossil fuels is projected to account for over half of the forecasted global warming. Much of the remaining increase in average world temperatures will be from livestock derived methane. In 1995 the United Nations Environmental Programme determined from the available body of evidence that the extent of future global warming will range from 1.8 to 6.3 degrees Fahrenheit with a corresponding increase in sea level of 4 to 37 inches (above 1995 levels).[25, iii]

Ecological Impacts

The immediate effect of higher average temperatures and increased concentration of atmospheric CO_2 will be more vigorous growth of most plant life. However, the

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[i] Scientists cannot conclusively determine CO_2 concentration data earlier than 160,000 years ago because older ice cores have not been studied. Other methods of determining prehistoric CO_2 concentrations are available, but they are indirect and therefore less reliable sources of information. (Raynaud et al. "The ice record of greenhouse gases". *Science*, 1993)

[ii] Researchers have determined this from analyzing the different isotopes of carbon within atmospheric CO_2, and comparing these results with the isotopes of carbon within fossil fuels. From this they have determined that there is an increasing amount of carbon within atmospheric CO_2 that bears the chemical signature of fossil fuel. Scientists have confirmed these results by comparing very old samples of atmosphere trapped in ice cores (of which we only have data for the last 160,000 years).

[iii] The lower figure assumes that current levels of fossil fuel combustion are held constant. The higher figure assumes that third world nations will eventually consume fossil fuels on a per capita rate similar to that in Europe and America (circa 1995). The projection period is to the year 2100.

make-up of most plant communities will change as a direct result of the change in temperature and an indirect result of the change in CO_2 concentration.[26, i]

For example, the increase in temperature will rapidly push the habitat range of cold adapted plant communities higher up mountain ranges. This will result in a decrease in habitat area for these plant communities and the animals that depend upon them. Unfortunately, roads, highways and other human settlements will slow the migration of these plant communities. Extinction of plants and animals will inevitably result unless humans can aid the relocation of plant communities and the animals that depend upon them.[27]

If relocation efforts are not effective, then large portions of plant communities will have increased extinction rates. For example, the underlying dead plant material will decay and be susceptible to very intense fires that can destroy the ability of the soil to support plant life for an extended period of time. Even if the plant community escapes fire, it will be increasingly invaded by plant species that reproduce rapidly and do well in disturbed ecosystems (commonly called weeds). These disturbances will continue until plant communities that are better adapted to the new temperature regime are able to colonize the area.[28, ii]

VI. Economic Consequences of Global Climate Change

The 1990s was both the hottest decade on record and the most costly for the insurance industry. Following are excerpts from a speech given by Jeanne M. Fox, who is a regional administrator for the U.S. Environmental Protection Agency (at time of publication of this document). Fox was addressing members of the insurance industry attending a panel discussion on climate change on March 28, 2000.[29]

"Earlier this month, the National Climate Data center reported that for the third year in a row, the United States has set a record for winter warmth with the December 1999 to February 2000 winter just completed. According to data gathered last year by the Goddard Institute of Space Science, the 1990's were warmer than the 1980's -- the warmest decade on record – by two-tenths of a degree. Last year was the fifth warmest year on record. This, despite the fact that *La Nina* had a cooling effect during the year…."

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[i] A global warming of 1.8 to 6.3 degrees Fahrenheit will cause a poleward migration of forest types of 100 to 340 miles and an elevation migration of 500 to 1800 feet. The short time period allowed for this migration combined with the barrier of human development will further stress already disrupted ecosystems.

[ii] This is just one example of the ecological consequences of climate change. Others are; Sea level rise will destroy coastal wetlands by submerging them (migration of wetlands will be blocked by human development). Some areas will experience more rain, others will have less. This will further shift the placement of plant communities. In addition, the current desert belt will migrate northward in the Northern Hemisphere and southward in the Southern Hemisphere.

"Last year, the Environmental Defense Fund issued a report on the potential impact of global warming on the New York metropolitan region, which projected similar catastrophic possibilities. Among its findings:

> By the year 2100, in the ***best*** case scenario, New York will have as many 90-degree-plus days as Miami has today -- nearly double our current level. In the worst case scenario, 90-degree-days could increase by a magnitude of six…."

"In 1998, weather-related natural disasters produced significant human and economic losses. Hurricanes, storms, heat waves, floods and earthquakes worldwide claimed 50,000 lives and cost approximately $93 billion. Insured losses accounted for $15 billion of the total, the fourth highest annual figure ever. According to the Reinsurance Association of America, nearly 50% of the insured losses from natural catastrophes during the past forty years have been incurred since 1990."

Appendix to Chapter 4: Overview of TOD Activities in Major U.S. Transit Systems Outside California

Primary author of this section: GB Arrington, Parsons Brinckerhoff

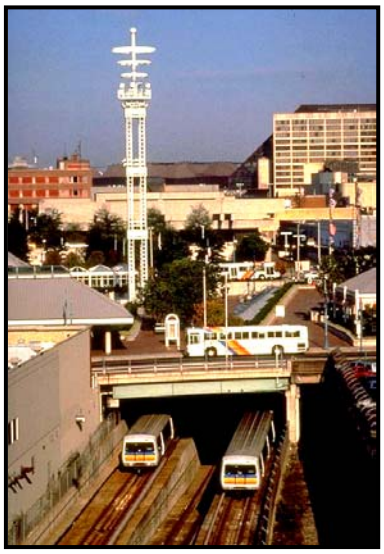
Atlanta, Georgia

Description Of The Transit System

Atlanta's Metropolitan Area Rapid Transit Authority (MARTA) system incorporates north-south and east-west lines with 48 miles of double track and 38 stations, opened between 1979 and 2000. MARTA opened a new two-mile northern extension in December 2000 that added two new stations, Sandy Springs and North Springs.

Policy Framework For TOD

The Atlanta Regional Commission's (ARC) development plan includes a number of policy statements supporting rail station-area development. A section entitled "Transit Station Area Policies" encourages transit-related development around rail stations and intermodal facilities and includes policies that support improvements in areas "that present the best opportunities for development and redevelopment.[30]



Parsons Brinckerhoff

Acting on the Federal Transit Administration's 1997 directive on joint development, MARTA launched a bold TOD initiative in that same year. Following a thorough review of all real estate assets, the Authority developed a comprehensive inventory of transit properties. These sites were classified according to their development potential, with flexibility for properties to move between categories as market conditions and circumstances changed. Based upon this initial assessment, four properties were ranked at the top of the list: a 47 acre site at the Lindbergh Center Station, an 11 acre park-and-ride lot near Sandy Springs Station, a 16 acre tract at the Medical Center Station, and a small parcel near the North Springs Station in downtown Atlanta. With the help of an outside consulting firm, MARTA began to market the site at the Lindbergh Center Station. This project became the flagship and model TOD for the Authority. The development of the four properties is described below under TOD Implementation.

While MARTA relies upon its own expertise to initially evaluate properties, it is the Authority's policy to encourage prospective developers to conduct market research and propose the best mix of uses on each specific site. As it offers properties for development, MARTA strives to be responsive and flexible in working with private developers and public development authorities to create new destinations and points of origin for transit riders throughout the greater Atlanta region.

Many TODs have been developed in Downtown and Midtown Atlanta, Decatur, and the Buckhead area as entirely private undertakings that do not involve publicly owned land. MARTA does not own significant tracts of developable land at all of its stations but there are opportunities for TOD projects on private holdings, and the Authority actively encourages the development of these sites as part of its overall TOD policy.

Status Of TOD Implementation

Lindbergh City Center: MARTA's flagship TOD represents a mixed-use project consisting of office, retail and multifamily residential development on the 47 acres owned by the Authority around the station. MARTA recognized the potential of this property during the early days of TOD policy formation. Using a competitive bid process, the Authority selected a private real estate consulting firm to help market the Lindbergh property in August of 1997. This initial marketing effort started a three-year process involving the selection of a master developer, public hearings, zoning, negotiation of long term ground leases and contracts, court challenges, and many smaller challenges that determined the final makeup of the Lindbergh City Center.

Carter Associates, Cooper Carry & Assoc.

Lindbergh City Center Master Plan, MARTA

A team headed by Carter & Associates was selected as the master developer. Their plan called for building a mini-city with a pedestrian-friendly Main Street as the public focal point. Street front shops and restaurants bridge over the existing transit station and extend into a multifamily residential area. During the time MARTA and its developer were introducing the project to area residents, one of Atlanta's largest corporate citizens recognized the potential of the Lindbergh development. BellSouth asked to become the anchor tenant in the office portion of the project. Their investment in the TOD represented part of an overall $750 million relocation of corporate operations from scattered suburban offices to a concentration near central city transit. Other partners involved in the Lindbergh City Center include Post Properties, Harold A. Dawson Company, and Federal Realty Investment Trust. As a part of its role in this project, MARTA will invest significantly in the upgrading of infrastructure, including sewer improvements and station expansion. These upgrades will be financed through the Authority's bonding capacity.

Carter Associates, Cooper Carry & Associates

Lindbergh City Center Cinema, MARTA

Currently, the scope of the Lindbergh City Center can be determined by the Phase I construction that is underway consisting of 1 million square feet of office space by

BellSouth. In addition, Federal Realty Investment Trust is poised to begin construction of 300,000 square feet of ground level retail along the TOD Main Street. Other construction phases involving residential and station area improvements will follow.

Abernathy Road: A joint development is also underway on an 11-acre MARTA-owned park-and-ride lot at the intersection of Abernathy Road and Georgia 400 in north Fulton County. This property became desirable as a TOD when the opening of the nearby Sandy Springs Station reduced the need for a park-and-ride facility. MARTA asked for proposals and, using a competitive bid process, selected Abernathy Development Partners (a joint venture of Ackerman & Company and H.J. Russell & Company). The proposed mixed-use project combined office, hotel and retail activities with residential condominiums. Local zoning and project plans have received approval and ground lease agreements are currently being negotiated. Final approval for this project is expected to go before the MARTA Board of Directors in January or February of 2001.

Medical Center: In June 1999, MARTA received proposals from two competing teams for development of a 16-acre parcel adjacent to the Medical Center Station. The team led by neighboring Saint Joseph's Hospital was selected to develop the property for medical office and residential. This site is unique because of its central location to an area called "pill hill" where three major hospitals are located and because it crosses county lines to include both Fulton and DeKalb. Zoning approval for medical offices in the Fulton County portion of the property has been secured, and negotiations are underway. Final approval for this project is expected to go before the MARTA Board of Directors in January or February of 2001.

West Peachtree at 3rd Street: BellSouth Corporation was selected for the joint development of a 1.3-acre site near the north entrance to the North Avenue Station. MARTA's parcel will be included in the larger assemblage of property that is being carried out by BellSouth as part of their MetroPlan for office restructuring.

Other TOD Projects:
MARTA has also been active in gaining support for the development of other TOD projects in cooperation with local development authorities. These include planned projects at Kensington, Chamblee, Ashby, Hamilton E. Holmes, College Park and Lakewood-Fort McPherson Stations.

Highlights And Key Issues
The consolidation of BellSouth into three new centers by 2003 will mean 80% of the company's employees in metro Atlanta will work near a MARTA rail station, compared to 30% today. To enhance access for its employees, BellSouth is building parking for its employees at four MARTA stations.

Investments in new construction and renovation within walking distance of MARTA Stations have risen from $537.5 million in 1996 to $850.8 million in 1999. Projects include residential, office, retail/commercial, mixed-use and public/institutional. MARTA's ability to shape development in Atlanta is severely limited by the fact that a majority of new growth in metropolitan Atlanta has occurred in counties outside of MARTA's service area.[i]

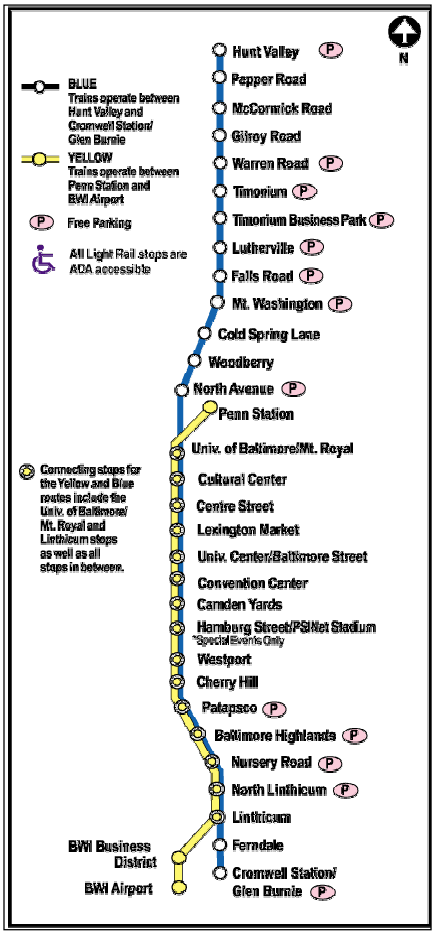
[i] The primary contact and reviewer for the Atlanta profile was Lynda Penton LPenton@itsmarta.com

Baltimore, Maryland

Description Of The Transit System

The Maryland Mass Transit Administration (MD MTA) operates light and heavy rail transit along with standard fixed-route bus services for the Baltimore metropolitan area, as well as operating the Maryland Rail Commuter (MARC) service for the entire state.

The Baltimore Metro [heavy rail] system opened in 1983, and presently consists of 14 stations along a single 14.5-mile line that extends from Owings Mills in the northwest to Johns Hopkins Hospital in east Baltimore. Its alignment is alternately subsurface, surface, and elevated, with most of the downtown operations underground. Average daily ridership is about 52,000. The newer Central Light Rail Line initially opened in 1992, and presently comprises a single 30-mile at-grade line with 32 stops. Outside the downtown, the stops become formal stations, while downtown they are generally stops along the street system. The system extends from Hunt Valley in the north to BWI Airport in the south, intersecting with the Metro system at only one location – Lexington Market in downtown Baltimore. Average daily ridership is about 30,000.



Baltimore LRT Line

Policy Framework For TOD

In September 2000 Governor Paris Glendening appointed a special Transit-oriented Development (TOD) Task Force chaired by the Secretary of Transportation. The task force was charged with identifying TOD benefits, identifying barriers to achieving TOD, and preparing recommendations to broaden the implementation of TOD in the state of Maryland. Smart Growth has been a major focus of Governor Glendening's administration. The task force concluded that TOD is one of the most important tools in the state's toolbox to help realize Maryland's Smart Growth agenda. At the same time, TOD has not been widely achieved in Maryland. To help realize the promise of TOD in Maryland the task force identified a series of barriers in the areas of planning and zoning, market and financial feasibility, institutional relationships, and public perceptions that need the attention of the state.

Seventeen specific recommendations were prepared and forwarded to Governor Glendening to help achieve greater implementation of TOD in Maryland. The recommendations covered the following:

- Provide TOD financing options at the developer, local government, and household levels;
- Broaden the authority of the Maryland Department of Transportation by making TOD a transportation related purpose
- Combine State backing—in terms of resources and guarantees—with strong local partnerships so that TODs move forward in Maryland on broad-based support; and
- Establish ongoing oversight by creating a TOD Advisory Council that is focused on moving TOD forward in the State.[31]

MD MTA has no formal policy for TOD or joint development. Its "unofficial" policy acknowledges that its physical assets are underutilized and that if development around these assets is intensified and made pedestrian-friendly, increased ridership should result.

Its strategies to encourage joint development programs are to:

(1) use MD MTA property as an incentive to development,
(2) provide transportation improvements within the "TOD zone," and
(3) work through the local community planning and development agencies to identify opportunities and to provide the necessary zoning and/or density bonuses to accommodate the development.

MD MTA does not have a formal marketing process for TOD/joint development, other than the informal process described above. They have undertaken various studies, however, to assemble information on conditions and opportunities at transit station sites. These include transit station vicinity profiles for each station in the Baltimore and Washington systems (1995), parking facility profiles for each station (1997), and assessment of station access facilities or needs under ACCESS 2000 (1998). The station vicinity profiles are now being updated and enhanced to become development opportunity profiles, similar to Portland's, to be used for marketing TOD opportunities.

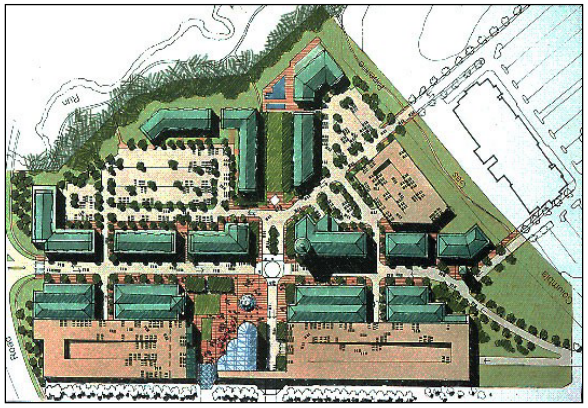
Status Of TOD Implementation

Charles Center Plaza was MD MTA's first joint project. An air rights development at the Charles Street Metro station, it consists of a 250,000 square foot office development, with 25,000 square feet of retail space, and a plaza.

Current activity downtown includes development around the Johns Hopkins station site in order to support major medical center activity. The first Metro suburban joint development project was Reisterstown Plaza, consisting of a day care center and a 9,000 square foot police station. It was financed through a $1.5 million Livable Communities grant matched with $300,000 from the City of Baltimore. This site has recently been the focus of discussions to relocate district court facilities to the area.

The most significant suburban project is Owings Mills at the western terminus of the system. While the station was opened in 1987 and development of a town center was a prominent factor in the planning, progress has been slow. A 1990 site plan was prepared for high-

intensity, mixed-use on 37 acres of land acquired by MD MTA for parking at the station. Components of the site were to be linked by a people mover. MD MTA actively solicited developer interest in the site, but with no major proposals received. An existing regional mall and business park competed for growth at the site during a time when the Baltimore economy was flat, and the mall actually erected a fence between itself and the MD MTA station as a hedge against a perceived crime threat. The project is showing new life, and MD MTA is negotiating with a developer to locate on the property. The State has offered to pay $13 million for parking garages, to provide improved pedestrian connections to the existing mall, and to study and attempt to relieve traffic access problems along Reisterstown Road. In support, the County has agreed to spend $9.2 million to locate a satellite community college campus at the site, along with a public library branch.



MD MTA

Owens Mill TOD Concept

The light rail system has not seen as much joint development action, partly because it is newer, and partly because stations are not located in areas that are currently attracting growth.

The Symphony Centre project is located at 901 North Howard Street in Baltimore's cultural district. Plans are underway for a developer to construct two, three-story office buildings on the 6-acre MD MTA site. They will include 98,000 square feet of office with 24,000 square feet of ground floor retail. The site will also have a seven-story, 140-unit apartment building, and a six-story/650-space parking garage. The project is significant in a number of ways. It provides an important second connection between the light rail and the Metro system. The site is a node for six bus routes. The development will result in 480 new jobs and complement ongoing west side revitalization efforts. With its proximity to the Meyerhoff Symphony Hall, it will result in round-the-clock activity at the site. Other projects are under development at Hunt Valley and Mt. Washington.

MARC system stations are also a focus for TOD initiatives, although it's not clear what MD MTA is doing to support the development beyond enhancement of station areas. Important examples are at Gaithersburg (Washington area), Laurel, and Odenton (Baltimore area). Among the most ambitious efforts are sites where local rail and commuter rail stations are being combined into transit centers, as is happening in downtown Silver Spring (DC), Greenbelt (DC), New Carrollton (DC), and Penn Station (Baltimore).

Highlights And Key Issues

The combination of a city administration focused on other issues, a relatively weak regional organization, and a transit agency managed by the state has complicated leadership and coordination of TOD. State management and funding has allowed the transit agency to take a regional outlook but local governments appear to be unmotivated to promote station area development.[32, i]

[i] The primary contact and reviewer for this profile was Rich Kyzmyak kuzmyak@mdot.state.md.us

Chicago, Illinois

Description Of The Transit System

Chicago's regional transit network combines operations of four agencies:

- The Chicago Transit Authority (CTA) operates heavy rail and bus facilities in Chicago and 38 suburban municipalities. There are seven primary rail lines totaling about 225 route miles and 143 rail stations, with 560,000 passengers on an average weekday. There are 134 bus routes with 960,000 passengers on an average weekday;
- The PACE suburban bus system with 3,600 miles of bus routes and 184 vanpools;
- The Metra commuter rail system that has 505 route miles and 228 stations on 11 lines carrying an average of 277,000 weekday passengers; and
- The Regional Transportation Authority that provides financial and planning oversight for the three operating systems.

Policy Framework For TOD

Regional transportation policies are established by the Chicago Area Transportation Study (CATS), which acts as MPO for the region, and the policies are related to regional planning activities conducted by the Northeastern Illinois Planning Council (NIPC). Both of these agencies have adopted policies supporting transit-focused development. The *2010 Transportation System Development Plan Update* supports improvements to "increase transit use by encouraging intensive developments to locate within easy access to existing or planned mass transit service." One of the goals of the regional transportation plan is to "encourage local governments to consider land use regulations and development strategies that support TOD and design." [33]

The CTA has no specific policy regarding TOD, which it sees as the responsibility of the local jurisdictions. Stations have been in place for close to 100 years. With few exceptions, there is very little land for joint development. CTA often has to acquire land as part of its station rehabilitations.

The CTA defines its role as building development-oriented transit. When a station rehabilitation or reconstruction is proposed, the agency studies the community context, assesses the future development potential, and then designs the station to serve the anticipated growth. With the well-established street grid of Chicago, this usually means making sure those connections to bus service on the arterials work, that the station design minimizes security problems, that it fits into the neighborhood, and that the pedestrian environment is inviting. CTA worked with the City and the Regional Transportation Authority to prepare the *Guidelines for Transit-Supportive Development*, as part of a campaign to educate on ways to help transit make a difference in reducing traffic and congestion.

Status Of TOD Implementation
CTA supports focused coordination in which agencies work together to ensure the most effective use of resources in a station area. This involves capital planning such as business development projects, streetlights and streetscape improvements for completion at the same time as the station reconstruction or renovation. The Authority participates in local jurisdiction meetings regarding development near stations. They are flexible regarding architectural themes and willing to modify designs to provide direct connections with proposed development adjacent to stations.

The Urban Land Institute (ULI) and the "Campaign for Sensible Growth" led by the Metropolitan Planning Council have been advocating broader implementation of TOD as a principle in the Chicago region.[34]

Highlights And Key Issues
The Strategic Neighborhood Action Plan (SNAP) encourages the coordination of capital planning for communities.

TOD planning continues to be an area of debate in Chicago. Recent smart growth initiatives by the Chicago Chapter of ULI (the regional planning organization) and private sector groups hold promise of making progress.[i]

[i] The primary contact and reviewer for the Chicago profile was Linda Fuller Fuller@transitchicago.com

Cleveland, Ohio

Description Of The Transit System

The rail and bus systems of the Greater Cleveland Regional Transit Authority (GCRTA) serve an area of over 515 square miles and a population of 1.6 million in the City of Cleveland and 66 suburban jurisdictions. The GCRTA bus system has 102 routes that total 1,108 route miles. The rail transit system consists of three lines. The 19 mile Red Line, the heavy-rail component of the system, has 18 stations. The 13 miles of light rail Blue/Green Lines serve 29 stations.

All of these lines converge at the downtown Tower City station that, as a central bus interchange point, is the intermodal facility for the downtown area. The GCRTA is constructing a light rail extension. GCRTA plans call for construction that includes a busway, relocating five heavy-rail stations of the Red Line, extending other existing lines, adding lines, and reinstituting commuter rail service to northern Ohio communities.[35]

Parsons Brinckerhoff

Cleveland Waterfront Light Rail

Policy Framework For TOD

The five-county long-range transportation plan adopted in 1989 by the Northeast Ohio Area-wide Coordinating Agency (the regional MPO) provides very general support for "an integrated transportation system which will effectively serve and enhance the present and future land use patterns and promote the best balance of land use and transportation development."

The GCRTA's 1993 *Transit 2010 Long Range Plan* promotes "the best balance of land use and transit development, including joint development and multiple-use areas" and recognizes the support given Transit Focused Development by local government policies. The citywide plans in Cleveland's *Civic Vision 2000* include policies to promote transit developments that stimulate economic development, provide access to major traffic generating facilities, and "encourage joint public/private development of transit stations and associated amenities."

GCRTA also adopted a policy statement in 1993 to guide joint development and station-area development activities.[36]

Although no policy changes have been made, GCRTA has initiated a new model of station area planning which they plan to use at all of their stations. The agency now works exclusively with neighborhood organizations to accommodate local development plans into the stations. Station design is only part of the partnership. They have been successful in gaining support and development from local partners.

Status Of TOD Implementation

In 1988, the GCRTA initiated a major redevelopment project on a 17-acre site in downtown Cleveland. Called Tower City Center, the project redeveloped the historic rail station serving downtown and introduced a 360,000 square foot, multi-level shopping center, a new office building, and a first-class hotel. It renovated the existing Terminal Tower, transformed a former post office into a new office building, and rebuilt the rapid transit station access ways through the complex, the tracks, and the platforms below the complex. In addition, the Authority built a walkway connecting the transit station to the new Gateway Center stadium and arena through the complex. The $388 million project has transformed Cleveland's downtown and attracted a 30 percent increase in rail transit ridership.

The GCRTA also prepared site assessments for two stations that have excess parking capacity and requested indications of developer interest in those sites. As a result, the Authority is:

- Acquiring additional property and completing negotiations with a developer to build a Head Start childcare center at the renovated Windemere station, using funds from an FTA Livable Communities grant;
- Negotiating to lease excess parking area at the Triskett Station to a developer who in turn will lease the space to the Greater Cleveland Council of Economic Opportunity for another childcare center;
- Planning to construct another enclosed passenger access way, probably with federal funding, linking the Tower City station to a new federal courthouse.[37]

GCRTA has had success at their W. 65th Street station where they are partnering with a local development corporation to include a plaza, a concession, and a post office or credit union near the station. A local church is also working on an elderly housing complex adjacent to the station.

In East Cleveland, GCRTA is partnering with a local daycare agency to include Headstart day care adjacent to a station. They are also working with a local public library and the county on another station plan.

The proposed Euclid Corridor Transportation Project is a cluster of projects intended to improve transit service along Cleveland's "Main Street." It includes the Euclid Corridor Bus Rapid Transit (BRT) line, construction of east side and west side transit centers, and renovation of three Red Line Rapid Transit Stations. The BRT line will connect the central business district with the University Circle area and major cultural, medical, and educational districts. Electric trolley buses will operate in the exclusive center median busway then transition to the curb before continuing to the neighboring City of East Cleveland.

The Northeast Ohio Commuter Rail Feasibility Study is underway to assess the viability of introducing commuter rail service in ten travel corridors within a nine county area. In the final round of Phase 1, from late 1998 to early 1999, the study team assessed the overall feasibility of commuter rail in the Northeast Ohio region and made recommendations for next steps toward implementation of commuter rail in any corridors where such service proves to be feasible and warranted. The boards of the three metropolitan planning organizations adopted these recommendations, and the Final Report for Phase 1 was completed in mid-1999. A second study phase is expected to include such topics as: additional ridership forecasting, identification of rolling stock fleet procurement options, engineering analyses of track connections and required capacity improvements, investigation of alternative station, parking and access locations, and implementation planning.

Highlights And Key Issues

Instrumental in the rebuilding of the downtown terminal, as a major joint development was the driving force of Forest City Enterprises, a nationwide shopping-center development company headquartered in Cleveland. The developer was able to tap a variety of public and private resources to organize and finance the project. In addition, the GCRTA recognized the need to increase ridership and established both the policy basis and staffing to complete the project. With that positive experience, the Authority was stimulated to pursue other opportunities.[38, i]

[i] The primary contact and reviewer for the Cleveland profile was Mary Beth Feke MFeke@GCRTA.org

Dallas, Texas

Description Of The Transit System

DART

The Dallas Area Rapid Transit (DART) operates bus, paratransit, light rail, commuter rail, and high occupancy vehicle lane services across a 13 city, 700 square mile area. In 1996, the 20 mile light rail system opened and there are another 24 miles under construction. The starter line has 20 stations and includes a downtown transitway mall and a 3.5-mile tunnel under the North Central Expressway. Daily ridership is over 38,000, and by 2010 DART projects an average of 185,000 passengers per day.

Voters approved a one- percent sales tax to provide funding for 52 miles of extensions to Carrollton, Las Colinas, and Pleasant Grove and light rail to Dallas-Fort Worth International Airport. As of February 2000, DART's Transit System Plan for service development during the next 15 years includes:

- 93 miles of light rail transit
- 22 miles of commuter rail transit
- 110 miles of High Occupancy Vehicle (HOV) lanes
- General Mobility Programs (Rideshare, Transportation Demand Management, Congestion Management, Intelligent Transportation and Local Assistance programs).

In August 2000, $2.9 billion dollars in long-term bonds were approved for transit development through 2013. The bonds will make it possible for DART to accelerate construction of future rail lines by an average of four to five years—eight years to the airport -- as well as promoting the ongoing purchase of low emission buses and the construction of HOV lanes.

In September 2000, DART and the Fort Worth T extended the Trinity Railway Express commuter rail line into Tarrant County with four new stations including the airport. Next year, the Trinity Railway Express will be extended all the way to downtown Fort Worth.


DART

Cedars Station TOD

The Cityplace subway station,10 stories beneath North Central Expressway, opened in December 2000. The west entrance is flanked by several proposed developments as well as the nearly completed West Village residential, retail and entertainment district.

The twenty mile light rail starter system is being expanded 12 miles eastward to the Northwest Highway in fall 2001, to LBJ Freeway in spring 2002, and to downtown Garland in fall 2002. A second 12-mile extension to the north will serve Richardson in 2002 and Plano in 2003.

Policy Framework For TOD
The regional planning agency that performs MPO functions for the Dallas area, the North Central Texas Council of Governments, has just adopted a policy in support of sustainable development.

Mobility 2010: The Regional Transportation Plan for North Central Texas contains only the most general references to linking land use with transportation. The city has adopted no incentives for development around DART stations.[39]

DART has adopted no specific policies supporting TOD. However, the agency's mission and goal statement refers to economic development and quality of life. DART is working with its member cities and the Council of Governments to determine ways to link its stations with pedestrian networks.

Status Of TOD Implementation
Since the opening of the system in 1996, the *Dallas Morning News Reports* more than $800 million in new commercial and residential investment within walking distance of the DART rail stations has either been constructed or is in process.[40]

Cedars Station encouraged the transformation of a long vacant structure one block away into 450 loft apartments with ground-floor retail space and a retail arcade running through the middle of the building along a former railroad tunnel. Commercial tenants, including two high tech companies and a law firm, will move in this year, and the total building is scheduled for completion by fall 2001. The new Dallas police headquarters is being built on land donated by the developer.[41]


DART

Mockingbird Station TOD (under construction)

Mockingbird Station is linked by a pedestrian bridge over the DART line, to a high-density mixed-use development with 211 high-end loft apartments that have just been completed. The gardens, courtyard, restaurants and offices on the remainder of the site will open soon. The development company, UDC Urban, is developing the TOD on a 10-acre site of a former Western Electric Building.

Cityplace Station opened in December 2000, ten stories below ground. It brings together DART rail and bus service with the McKinney Avenue Trolley, an authentic electric-powered trolley line from the early 20th century. West Village, a mixed-use development one-quarter mile away, will be connected with the station via a tree-lined boulevard with a trolley line down the middle.

Galatyn Park Station will bring rail to the City of Richardson in summer 2002 and provide access to a forecasted 126,000 jobs in the "Telecom Corridor" by 2020. Station area development includes a nearly completed hotel and a performing arts center that is under construction. A mixed-use TOD is proposed for the remainder of the 12.5-acre site.

Plano Transit Village is a retail and residential complex that is being created in a public/private partnership. DART is working with the City of Plano and the developer to integrate the station design with the surrounding 19th century architecture. The station will open in summer 2003. The project will be completed in late 2001, and a second phase has just been announced.

DART

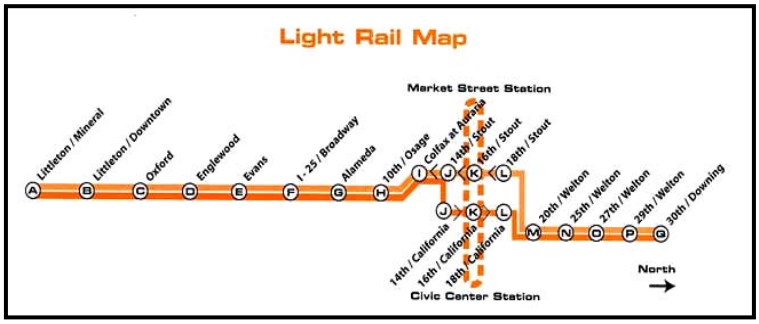
Highlights And Key Issues

A study by a University of North Texas (UNT) economist, Dr. Bernard Weinstein,[42] shows that values of properties adjoining DART stations increased 25 percent more than similar properties not served by rail between 1996 and early 2000.[43] Another UNT study shows DART's current five year expansion is generating $3.7 billion in economic activity and more than 32,000 jobs through 2003.

Denver, Colorado

Description Of The Transit System

Denver's first light rail line, the Central Corridor, began operations in 1994. The 5.3-mile line runs through Five Points Business District and the heart of downtown. It passes a center hosting three higher education institutions, the convention center, the Performing Arts Complex, and Denver Pavilions. With 15 stations, the line provides the spine of a larger regional transit system. It is operated by the Rapid Transportation District (RTD), which constructed and operates the line entirely with local funds derived from a 0.6 percent addition to the local sales tax. Ridership has risen annually and in 1998 averaged 16,266 on weekdays.



RTD

In 1996, RTD received federal funds for the Southwest Corridor, a light rail (LRT) line between downtown Denver and the City of Littleton. The 8.7-mile line has five stations, four of which have park-and-ride lots. Since the line opened in July 2000, ridership has been 80% above projections, and RTD has gone to a four-car configuration to address the demand.

The Central Platte Valley Light Rail Spur is currently under construction. The project is innovatively financed with RTD, City of Denver and private contributions. The 1.6-mile line extends from the campus area with stops at Auraria Higher Education Center, Invesco Field at Mile High, the Pepsi Center, and Union Station. It will open for revenue service in 2002.

The Southeast Corridor has received full funding, including the local match for a federal grant. The 19-mile line includes 13 transit stations and will link the tech center with downtown. This is a joint project with Colorado Department of Transportation widening the highway and RTD constructing the light rail line, which is expected to open in 2007-2008.

Calthorpe Associates

Englewood TOD Master Plan

Policy Framework For TOD

RTD hired a Transit-Oriented Development Specialist in June 2000. The position is responsible for working with other agencies, local jurisdictions and developers to encourage TOD.

Formal policies have been proposed and are currently being reviewed by the RTD Board for adoption in February 2001. One of the draft policies calls for working with local jurisdictions to create a master plan and a Request for Proposal prior to approaching potential developers. The City of Denver is increasing its efforts to guide TOD around stations. No special transit zoning is in place.

A “One Stop Shop” for developers is in the making that will provide the relevant information about stations planned for the Southeast Corridor. The purpose is to encourage TOD proposals.

For those communities that may be reluctant to accept TOD, RTD is offering to split the cost of a Master Plan that includes several concept descriptions, sketches and traffic information. The effort is one way to avoid under building a station area in response to neighborhood concerns. If the community remains unconvinced, RTD is willing to leave their current surface parking lot in place and wait.

Status Of TOD Implementation

The City of Englewood TOD combines a transit hub with a civic and cultural center as well as office, retail uses, and entertainment on the site of “Cinderella City” a failed shopping mall. More than 500 residential units are planned, with a park and open space. The 55-acre site is located on a prime downtown corner. The City purchased the property, developed a master plan focused on light rail, and sold parcels to developers. RTD built the track and contributed to parking. Approximately half of the project has been constructed, and it is scheduled for completion in 2002.

Parsons Brinckerhoff

Pedestrian bridge from Englewood Station to the TOD

Littleton, a second ring suburban city, has a light rail station downtown. Affordable and senior housing, with first floor retail, and a community college are immediately adjacent.

The Southeast Corridor is a highway widening and rail project. Currently in the planning stage, it will have 13 stations. TOD proposals at the Broadway / Gates Rubber and the Colorado Center Stations are emerging. Several other sites are being master planned in 2001-2002.

A TOD analysis is currently underway to access the opportunity to create a new urban center in the City of Lakewood on the site of the Denver Federal Center. The project would use an Intermodal Transit Center along the proposed west corridor light rail line as an anchor tenant in the new TOD.

Central Corridor has three stations in the city planning process. The college proposed student housing near one, but the neighbors objected. They will initiate a joint planning process in 2001. At Five Points, the neighborhood asked for mixed-use and affordable housing. They are working with the city and urban renewal agency to put together a package.

In the past, local residents rejected two or three projects that were brought to RTD by developers. The current process of working with the community to create the plan and the RFP is intended to avoid past failures.

RTD

16th Street Bus Mall

Highlights And Key Issues

The Southeast Corridor will involve years of highway and rail construction. One major issue is how to deal with TOD in a design / build project. Change orders as the station plans emerge may require a contractual agreement to allow TOD development later in the process of construction.

Both the City of Denver and RTD have raised the profile of TOD within each organization. Like other communities, Denver's TOD approach is evolving as it gains more experience.

Denver's 16th Street Bus Mall has been a TOD success story.[i]

[i] Primary contact and reviewer for the Denver profile was Marilee Utter Marilee.Utter@RTD-Denver.com

Miami, Florida

Description Of The Transit System

The Miami-Dade Transit (MDT) operates a 21-mile heavy rail system in Miami and Dade County. Completed in 1984, it has 21 stations and weekday ridership averaged 45,400 in September 2000.

The downtown component of the system is a 4-mile automated "people mover" with 21 stations. It carries about 14,000 passengers on an average weekday.

MDT

System map

Policy Framework For TOD

Early in the system's development, the Miami-Dade County Comprehensive Development Master Plan provided a general policy framework for transit-focused development (TFD) by calling for the creation of high-intensity activity centers linked to rapid transit facilities, including pursuit of joint development opportunities. In addition, the South Florida Regional Planning Council's *Strategic Regional Policy Plan for South Florida*, adopted in August 1995, recommends as a major strategy the integration of land use and transportation, including transit-oriented development, and urges development of "high-density and mixed land use around intermodal connections".[44]

MDT

Miami Metromover

The City of Miami also supports Transit-Focused Development. Policies incorporated in the Goals, Objectives, Policies volume of its *Comprehensive Neighborhood Plan 1989-2000*, adopted in 1989 and amended in 1991, include "high-density commercial and residential development and redevelopment in close proximity to Metrorail and Metromover stations" and "using the City's land development regulations to help direct development where it will support the densities required for urban rail transit systems".[45]

The MDT adopted a Station Area Design and Development Program in the late 1970s to guide private development adjacent to station areas. It also adopted joint-use policies in 1981 to encourage private development in conjunction with the Metrorail transit system, particularly on properties owned by the county as part of the transit system development. It has pursued joint development by evaluating opportunities and formulating strategies to implement such development, including marketing properties and negotiating mutually beneficial agreements.[46] Thus, regional agency and MPO plans and city and transit agency policies have combined to provide a strong framework that encourages transit-focused development.

Status Of TOD Implementation

Development has occurred at several stations located in downtown and growing outer centers but not in most inner-city stations. MDT has negotiated a number of joint development and station interface projects. After the first project, which was initiated as the heavy rail system was being completed, a long decline in the local real estate market ensued. However, developer interest revived as indicated by the following list of projects.

Dadeland South Metrorail Station: The Datran Center is a privately owned development constructed on a Miami-Dade County owned, 6.5-acre site located adjacent to the Dadeland South Metrorail Station. The Center includes two class “A" office buildings totaling 472,000 square feet, 35,000 square feet of retail, a 305 luxury hotel and parking for 3,500 cars (1,000 of which are owned by MDT and dedicated for use by Metrorail riders). An additional 21,500 square feet of conference room facilities were recently completed. The project, which has been in operation for 12 years, provides more than $900,000 annually in new revenue to the County. Three of the four phases included in the lease have been constructed. The fourth phase, consisting of an office building and a hotel, is under construction.

MDT

Miami Metrorail station

Dadeland North Metrorail Station: In 1994, the Board of County Commissioners approved the lease of a 9.2 acre site next to the Dadeland North Metrorail Station for the development of a three phase mixed-use project specially designed to include a transit plaza and 9,600 square feet of transit convenient retail. Phase I, which opened in 1996, consists of approximately 320,000 square feet of retail space housing five major retailers. A hotel is planned for Phase II and an office building for Phase III. Alternately, Phases II and/or III may be developed as residential units.

An additional “outparcel” phase of this project consisting of 48 apartments was completed in January 2000. Upon buildout, the project will total 650,000 square feet. The County, which receives both guaranteed minimum rent and approximately 5% of gross income from the project, will realize between $40 and $100 million dollars in new revenue over the term of the lease.

South Miami Metrorail Station: Subsequent to a competitive request for proposal process, MDT accepted proposals for the development of Hometown Station in December 1998. One proposal was received. It is for a mixed-use project utilizing the area surrounding the station and the space above the back part of the garage. A lease agreement with Hometown Station, LTD. has been completed, and the project will be implemented in four phases. Phase I, refurbishing the garage; Phase 2, development of a 98,000 square foot commercial/office building; Phase 3, development of 13,000 square feet of retail space; and Phase 4, development of 150,000 square feet of commercial space to be built over the rear garage.

Martin Luther King, Jr. Metrorail Station: In 1999, the Board approved an agreement with the Business Assistance Center to construct a mixed-use development that will include a class B type office building with 172,000 net rentable square feet of office space and 13,500 net rentable square feet of retail/support services space, as well as construction of a new parking garage. Construction of the project will begin in March 2001.

Coconut Grove Metrorail Station: In 2000, the Board leased property at the Coconut Grove Station for a development consisting of (1) a 19 story mixed-use transit center with 23,000 square feet of ground floor retail, a 611 space parking garage and 220 market rate residential units, (2) a 19 story office building with 11,000 square feet of ground floor retail, a 500 space parking garage and 157,500 square feet of office space, (3) and a one story 30,000 square foot supermarket with 201 surface parking spaces. An alternate for phase 3 involves a 200-room hotel in place of the market.

MDT

Miami Metrorail in downtown

Santa Clara Metrorail Station: Lease negotiations have been completed for a project consisting of an affordable housing project with 208 units, 200 residential parking spaces and 88 dedicated Metrorail parking spaces.

Okeechobee Metrorail Station: A proposal has been received for a mixed-use development including 300 affordable and market rate rental units, an 80 to 100 room hotel and 250,000 square foot urban entertainment center with multi-screen theaters, restaurants, game rooms and clothing retailers, to be built atop the existing parking garage.

Brownsville Metrorail Station: A proposal has been received for a 260 unit affordable rental-housing complex.

Overtown Metrorail Station: A proposal has been received for a transit-related project at the Overtown/Arena Station. The development will consist of 274,000 square feet of office space, 35,000 square feet of retail support space, a 567 space parking garage and an open plaza.

Douglas Road Metrorail Station: The site includes 9.29 acres of land and currently houses the Metrorail station and surface transit parking. Approximately 2.2 acres of the site will be leased for a 150,000 square foot office building to be occupied by the Miami-Dade County Water and Sewer Department and a 750 space parking garage for personnel only. A public plaza will connect the development to the station.

The state, county, and city are planning an intermodal center on a 140-acre site near the airport. It will link Amtrak and commuter rail lines, bus routes, and airport related traffic.[47]

The owners of the Omni retail/hotel development will fund a skybridge between the Omni Metromover station and the third level of the Moni Mall.[48]

Highlights And Key Issues

South Florida's sprawling development is generally unsuitable for transit-focused development. However, the Miami system has managed to create significant access linkages between major development projects and a number of transit stations. The MDT pursued development opportunities from the beginning, but an economic downturn and social forces combined to depress development interest. Now, a more robust development market is stimulating a variety of station-area projects, especially at the Dadeland North and South stations near the Dadeland Mall, one of the largest in the nation. In addition, both stations are located in the special transit overlay zone established by Dade County. Thus, after a long lull in station-area development, it appears that a re-energized real estate market is allowing MDT to realize station-area development opportunities.[49, i]

[i] The primary contact and reviewer for the Miami profile was Frank Talleda 305.375.1507

Philadelphia, Pennsylvania

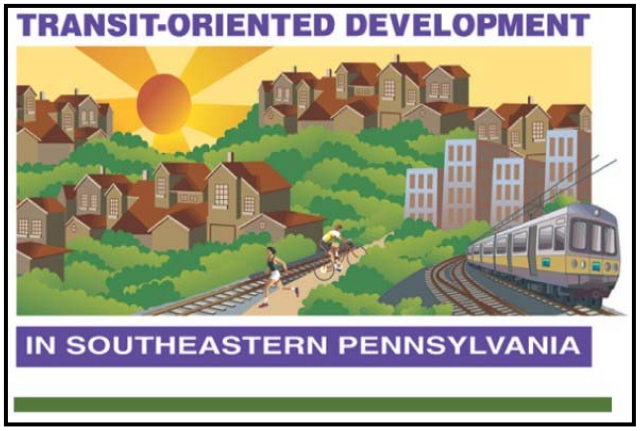
Description Of The Transit System

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides bus, light rail, heavy rail, and commuter rail services in the five county Southeastern Pennsylvania region. The area has a population of 3.8 million people with approximately 2 million employed.

SEPTA operates seven light rail lines, three heavy rail routes, 13 commuter rail routes, 5 trackless trolley routes, 110 bus routes and 56 school service routes providing over 1 million unlinked daily trips. The light rail routes total 51 miles in length, and the heavy rail routes are 37 miles long. A total inventory of 2,350 vehicles provides 17,100 daily revenue trips over 1,800 route miles.

Policy Framework For TOD

The Delaware Valley Regional Planning Commission (DVRPC),[i] the MPO for the region, includes policies that are supportive of Transit Focused Development (TFD) in its regional transportation plan*, DVRPC Year 2020*: *Land Use and Transportation Plan*. However, the DVRPC's plan is only advisory for the 239 municipalities in Pennsylvania and 113 municipalities in New Jersey. Suburban county planning agencies have embraced station-area development in concept, but few municipalities have implemented it in plans and zoning. Many communities with stations are intolerant of further development around stations. Philadelphia's planning department is not actively promoting transit-focused development but is working with SEPTA to write a model-zoning ordinance for station areas.[50]



SEPTA has a long history of working with developers to construct transit-related development. The Gallery, an enclosed shopping mall in downtown Philadelphia that opened in 1977, is a well-known redevelopment project over a station serving two SEPTA lines. The project was a forerunner of many later downtown redevelopment efforts involving joint development throughout the nation. SEPTA routinely considers area enhancement when renovating stations and has regularly leased space within stations for private retail businesses. However, it does not actively promote joint development or station interfaces because of neighborhood opposition to past proposals, a lack of transit-owned developable parcels, a lack of market opportunities in many sectors of its system, and constraints on its authority to work with developers to package joint projects. However, SEPTA has been working with Delaware County and four municipalities to prepare a zoning overlay district for transit-oriented development.[51]

[i] Delaware Valley Regional Planning Commission, at:: http://www.dvrpc.org/

Status Of TOD Implementation
No station-related development activities are currently underway and none are planned. SEPTA is working with the cities of Chester and Philadelphia to promote FTA's Livable Communities Initiation at stations in those areas.[52]

Responding to rapid economic growth and the need for more comprehensive public transportation, SEPTA is set to expand and enhance transit services in Bucks County beginning in November, 2000. The major expansion of transit service will include introduction of new bus routes, service improvements, route realignments and enhanced bus route connections to railroad services. The development of this project offers SEPTA the opportunity to be an even more important link between area business centers, shopping centers, and residential locations in Bucks County and in Philadelphia.

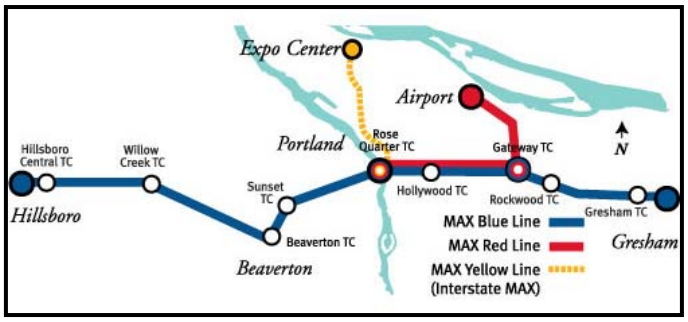
The Delaware Valley Regional Planning Commission has preliminary station area planning work underway for 5 stations along the proposed Schuylkill Valley Metro line. The Pennsylvania Environmental Council has been active in pushing TOD as a growth management and revitalization strategy on behalf of the planning commission.

Highlights and Key Issues
The Philadelphia story represents the common problem of regional agencies espousing TOD with little or no authority to implement action, while a multitude of local governments pay little attention to development opportunities. SEPTA's potential role as a stimulator of station-area development is apparently unrecognized and underused.[53] Leadership is now coming from DVRPC and the Pennsylvania Environmental Council.[i]

[i] The primary contact and reviewer for the Philadelphia profile was Tom Hickey Hickey@pbworld.com

Portland, Oregon

Description Of The Transit System



Tri-Met

The Tri-County Metropolitan Transportation District (Tri-Met) covers 592 square miles of urbanized Clackamas, Multnomah, and Washington Counties. Originally created to operate the bus system, which now includes 102 routes, Tri-Met also operates a 33 mile MAX (Metropolitan Area Express) light rail system.[54] The first segment, Eastside MAX, stretches 15 miles east from downtown Portland to Gresham and was completed in 1986. The second segment, Westside MAX, was built through long stretches of undeveloped land from Portland to Hillsboro and opened in 1998. The entire route has 50 stations. Ridership on bus and MAX is at historic highs. As of September 2001 Tri-Met ridership has been up 104 of 105 months. MAX reached a new record for 12-month average daily ridership of 71,200 boardings, and 84,000 average rides on weekends. Buses averaged 209,700 weekday boardings.[55]

Tri-Met began construction of the second line, Westside MAX, in 1992. The 18-mile line opened in 1998 with a total of 21 stations. Airport MAX started revenue service in September 2001. The 5.5 mile line was funded as part of an innovative funding package involving Bechtel Enterprises, The City of Portland, the Port of Portland and Tri-Met. Interstate MAX, a 5.6-mile, $350 million extension from the Lloyd district to the EXPO Center, is under construction and scheduled to open in 2004. A 2.1-mile Central City Street Car also started operating in July 2001.

Policy Framework For TOD

The Portland region has pursued an aggressive strategy of linking transportation and land use that is very supportive of TOD at a number of levels. The Region 2040 Growth Management Strategy adopted by the regional government, Metro, is built around transit. It features a tight Urban Growth Boundary, focusing growth in transit centers and corridors, and requiring local governments to adopt zoning and comprehensive plan changes to be consistent with the plan.

Legally binding station area plans were funded by Tri-Met and adopted by local governments before each MAX line opened for service. Prohibition of auto-oriented uses, minimum densities, parking maximums, and design requirements are features of the plans.

The Portland region uses a series of incentives to achieve more density, mix of uses, better design, and limited parking in TODs. The Oregon legislature enabled 10-year property tax abatement for TOD in 1995. Portland and Gresham currently use abatements. Portland has abated 7 projects with a combined value of $79.6 million.[56] Metro operates a TOD Revolving fund capitalized with CMAQ funds.

Parsons Brinckerhoff

Center Commons TOD

Status Of TOD Implementation
The pace of TOD implementation has accelerated in Portland as the community gains more familiarity with the approach. A number of large scale TODs are now under construction or completed along the East and Westside MAX line.

TODs along the east line:

The **Gresham Civic Neighborhood** features a new MAX stop tied to the level of TOD on the site, retail, housing, and community uses on 190 acres. TOD zoning for the site was approved by the city in 1990.

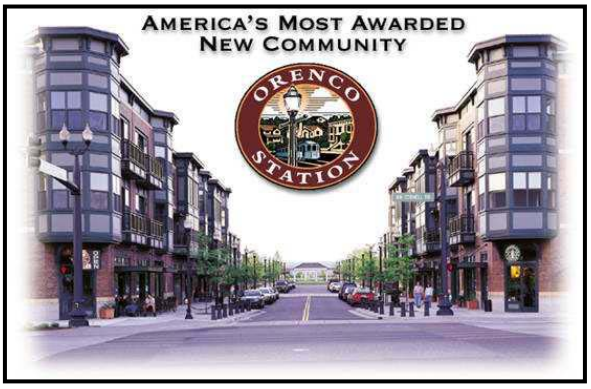
Russellville Commons Apartments at the 102nd station has 454 units on an 11-acre former school site.

Center Commons at the 60th station has 314 units of mixed-income for-sale and rental housing on a 4.9-acre former Department of Transportation maintenance site.

The Westside line includes:

Orenco Station, a 190-acre TOD with a town center, will have 1,834 homes. The National Association of Homebuilders recently named Orenco Station the best master planned community in the United States.

LaSalle Apartments have 554 housing units on 23 acres with ground floor retail at the Beaverton Creek station. The densities here are the highest in Portland's western suburbs at 58 units per acre.



Pac Trust Fletcher Farr

The Town Center at Orenco Station includes vertical mixed uses and active community

The Round at Beaverton Central is a $100 million mixed-use TOD. The Round has recently emerged from bankruptcy, demonstrating the difficulty of pushing the market and the need for sophisticated developers and local governments in developing TODs.[57]

The Airport MAX financing package is built around joint development. Bechtel Enterprises contributed $28.2 million toward the $125 million light rail project. In return, Bechtel, in partnership with Trammell Crow, will develop a 120-acre, transit-oriented development at the entrance to the airport. The balance of the funding comes from city of Portland urban renewal funds ($23 million), Tri-Met general funds ($45.5 million), and airport landing fees from the Port of Portland ($28.3 million). Approximately 11,000 jobs and $400 million worth of hospitality, entertainment, retail, and office space will be built at the site, called **CascadeStation**, when build out is completed in 2015.[58]

Interstate MAX includes a major TOD/urban infill element. Zoning for TOD was adopted well in advance of the project. Detailed studies are now underway to develop strategies for community-sensitive development. The project funding package includes $30 million from urban renewal.

Parsons Brinckerhoff

Central City Street Car leaving Portland State University

The Central City Street Car was developed explicitly as a tool to leverage more inner city housing immediately north and south of Portland's downtown. Warehouse conversions and new loft construction along the line in the Pearl District are part of the hottest real estate market in the region. Densities were substantially raised as part of the decision to build the project.

The Portland Streetcar cost $56.9 million to build. The major sources of funds included: $28.5 million in bonds backed by city parking revenues, $9.6 million from a one-time Local Improvement District paid by property owners, $7.5 million from urban renewal, and $5 million from Tri-Met.[59]

Highlights And Key Issues

MAX provides easy access to thousands of central city and suburban jobs. The Westside line serves 24,000 high tech jobs. Intel gives all of its 11,500 employees an annual pass.

The light rail line is a catalyst for transit-oriented development. Since the decision to build, some $2.4 billion worth of new development has occurred within walking distance to the MAX stations. The strongest development response to the light rail line came when:

- Developable land was consolidated under single ownership;
- Multiple public and private objectives were pursued;
- Implementation tools were in place and available; and
- Stations were well located in places with development potential.[60]

The impact of MAX has been felt from end to end of the line. Activity is greatest in the downtown, where light rail has played an important role in revitalizing the city center, and in the Lloyd District located just across the river.

Portland's innovative approach to integrating transportation and land use planning earned Westside MAX the First Place Award in the "Livable Communities Transit Competition" from the Federal Transit Administration in 1999.

Westside MAX has focused more than $500 million in new development within an easy walk of the stations. The line has become a magnet for new transit-oriented communities. Projects range from mixed-use, residential/retail developments to suburban redevelopment projects to new communities rising from green fields.

New transit-friendly land use plans are in place around each station.[i]

Parsons Brinckerhoff and the California Department of Transportation

Pioneer Place, a Rouse Company Mall in downtown, Portland, has light rail at the front door

[i] The primary contact for the Portland profile was GB Arrington (before joining Parsons Brinckerhoff Mr. Arrington was Director of Strategic and Long Range Planning for Tri-Met)

Washington, D.C.

Description Of The Transit System

WMATA

The Washington Metropolitan Area Transit Authority (WMATA) is responsible for construction and operation of the 103-mile Metrorail system in the District of Columbia, northern Virginia, and Maryland. It also manages a regional bus system. WMATA is the second largest bus/transit system in the nation. In January 2001 the entire system as originally planned will be in operation, with 83 stations.

One new station is under construction at New York Avenue. Two extensions of existing lines are being planned: one to Tyson's Corner and Dulles Airport, the second to Largo, Maryland along the Blue Line. The rail system carries 600,000 passengers on an average weekday. It consists of four lines, designed to follow existing or planned higher-density development corridors in the various jurisdictions. Many lines are routes along major road and highway corridors, although some follow railroad rights-of-way for all or part of their length. Stations were located at existing and future activity nodes. Much of the system in the District and close-in jurisdictions is underground.

Policy Framework For TOD

Planning for TOD in the Washington metropolitan area has been somewhat uneven given the unique political setting with two states and the District of Columbia. The district, for example, has provided little leadership or TOD planning for the areas surrounding the 34 Metrorail stations within the District of Columbia. That is changing with the commencement in October 2001 of a special Mayoral Task Force on Transit-Oriented Development.

The task force is working to:

- Prepare a Vision Statement and definition of "Transit-Oriented Development" for the District of Columbia to guide both the Task Force and the Public,
- Identify TOD benefits for the District and neighborhoods,
- Identify financial, regulatory, and institutional obstacles to TOD, and
- Prepare a prioritized set of recommendations for maximizing TOD benefits for the District.[61]

WMATA has an active public/private Joint Development Program.[62] Through this program, the Authority seeks partners to develop WMATA-owned sites to complement transit station and related facility operations with the following goals:

- Attract new riders to the transit system by fostering commercial and residential projects adjacent to Metrorail stations.
- Create sources of revenue for WMATA to operate and maintain the transit system by expediently negotiating development agreements.
- Assist the viability of local jurisdictions to recapture a portion of their past financial contributions and continue making subsidy payments by expanding the local property tax base and adding value to local revenue sources.

Beginning in 1996, WMATA began issuing annual solicitations offering a large number of sites for lease or sale. The Authority has created marketing brochures and a web site, as well as holding developers conferences. The City bid on two sites that they will use to decentralize their offices and spur economic development in the neighborhoods. The Authority is currently negotiating on approximately 30 properties. Recognizing that developers must replace parking, the price of the land is written down. WMATA supports developers, rezoning applications to higher density designations, and allowing residential and commercial uses. Over the last five years, the Authority has worked with local jurisdictions to plan and zone sites for TOD.

Status Of TOD Implementation

WMATA, has undertaken 54 development projects and connection agreements at a value of more than $2 billion on land they own. These undertakings produce $6-10 million annually in additional funds to the Metro system. The amount is forecast to grow to $15 to 17 million annually by 2015. In the year 2000, WMATA realized a 50 percent price premium (over appraised value) on land sales. The premium in land sales to WMATA exceeds $50 million.[63]

“Between 1980 and 1990, 40% of the region’s office and retail space was built within walking distance of a Metrorail Station. Since 1990, about 20% of office and retail space has been constructed within walking distance of a Metrorail station.

The Urban Land Institute estimated that Metrorail has generated $15 billion in additional development – this number will grow to $20 billion with the completion of the 103-mile system.

KPMG Peat Marwick estimated in a northern Virginia study that the Commonwealth of Virginia is receiving an annual rate of return of 19% on its investment in Metrorail through additional development attracted by Metrorail.” [64]

After 10 years of stop and start planning and citizen opposition, development is underway on recreating the "downtown" of *Silver Spring* on a 20-acre parcel purchased by the city. The station is planned within a 5-minute walk of the Metro Red line. The project includes 450,000 square feet of retail, 240,000 square feet of office, 255 Apartments, a hotel, and the “demalling” of City Place, a five-story retail mall built in the 1980s, by opening it up to the street.

New York Avenue station, expected to open in 2004, will be the first new addition to the original 103-mile Metrorail system. The project is bringing together partners working closely in

terms of financing, land use planning, design, and construction. This partnership, composed of the District of Columbia, the Federal Government, and private sector businesses, provides a unique opportunity to capture the potential for economic development in a long-neglected area.

Each of the partners will contribute approximately one-third of the cost of the project, which is estimated to total $84 million. Major landowners in the station's vicinity requested that the Mayor pursue legislation to create a Special Assessment District in order to raise their share.

The Federal Government plans to build the new headquarters of the Bureau of Alcohol, Tobacco and Firearms at New York and Florida Avenues, bringing 1,100 employees into the service areas of the new station.

As part of the environmental study and to ensure that the station reflects the needs of the community, Metro is actively soliciting feedback from neighborhoods in the area. A series of meetings have been held with the community, surveys and brochures have been distributed, and a web site has been created.

Parsons Brinckerhoff

Ballston Metro station

Highlights And Key Issues

Jurisdictions that Metrorail reached later in the construction schedule have shown less enthusiasm for promoting intensive station area development. This can be attributed in part to neighborhood backlash over the concept of intensive development around stations.

The region's local governments have rendered the current regional planning body, the Metropolitan Washington Council of Governments (WashCOG)[i] powerless to prepare a regional plan built on the policy guidelines of the 1960s. In addition, the National Capitol Region Transportation Planning Board, the region's MPO, staffed by WashCOG, has no authority to encourage transit-focused development through project prioritization.[65]

To capture the opportunity of Metrorail, local governments and WMATA need to turn more attention to creating transit-friendly communities in the areas surrounding stations.[ii]

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[i] Metropolitan Washington Council of Governments: http://www.mwcog.org/

[ii] The primary contact and reviewer for the Washington profile was Rosalyn Doggett rdoggett@wmata.com